

REMARKS

This amendment is being filed in response to the non-final Office Action dated July 5, 2007. By this Response, claims 14-16 are amended to improve wording. No new matter is introduced. Claims 1-19 are now active for examination.

The Office Action

The Examiner is thanked for the favorable indication that claims 7, 8 and 11-13 are allowable if they rewritten in independent form including all of the limitations of their respective base claims and any intervening claims. The Office Action rejects claim 1-6, 9, 14-15 and 17-18 under 35 U.S. C. §102(e) as being anticipated by Sugiyama et al. (U.S. Patent 6,858,827). Claims 10, 16 and 19 are rejected under 35 U.S. C. §103(a) as being unpatentable over Sugiyama et al., (6,858,827) in view of Tomita (U.S. Patent 6,778,766).

The rejections are overcome in view of the remarks presented herein.

This application pertains to an image-capturing apparatus that generates an image by adding outputs of pixels present around a given pixel to an output of the given pixel. A unique addition pattern generating unit is provided to generate an addition pattern with which pixel outputs are added together. The addition pattern may be generated in a number of unique manners. For instance, the addition pattern may be generated in correspondence to a type of image processing to be executed (independent claims 1, 14, 17), to a vehicular behavior detected by a vehicular detection unit (independent claims 9, 15, 15), or to a vibration status of the image-capturing apparatus (claims 10, 16, 19).

For example, the “addition pattern” may include adding outputs of pixels that are continuous along a longitudinal direction (Fig. 2), adding outputs of pixels that are continuous along a lateral direction (Fig. 3), or adding outputs of pixels continuous in a specified pattern or direction (Figs. 4 and 5). The type of image processing may include detecting an edge in an image or detecting a predetermined target object such as a pedestrian or a vehicle. The unique designs of the claims produce numerous benefits. Generating the addition pattern according to the type of image processing or vehicular behavior allows obtaining images with improved sensitivity without lowering the resolution. Generating an addition pattern corresponding to a vibration status of the image-capturing apparatus allows extracting detection target image with a high degree of sensitivity without lowering the resolution even when the optical axis of the image-capturing apparatus has shifted. See page 12, line 22 through page 13, line 1 of the written description.

In contract, while Sugiyama describes to an image-capturing apparatus that performs arithmetic operations on pixel signals, Sugiyama does not describes the specific manners that an addition pattern is generated as specified in the claims. Sugiyama only generally describes that treating and processing signals of four pixels as a single pixel, but does not specify an addition pattern generating unit configured to generate an addition pattern with which pixel outputs are added in correspondence to a vehicular behavior, a vibration status of the image-capturing apparatus or a type of image processing to be executed by a image processing unit, as described in claims 1, 9 and 10.

The other cited document, Tomita, was cited for its purported discussion of vibration reduction, and does not alleviate the deficiencies of Sugiyama.

Accordingly, claims 1, 9 and 10 are patentable over Sugiyama and Tomita. Claims 14-19 include descriptions comparable to those of claims 1, 9 and 10. Consequently, claims 14-19 also are patentable. Other claims in the application also are patentable by virtue of their dependencies. Favorable reconsideration of the claims is respectfully requested.

CONCLUSION

Applicant believes that this application is in condition for allowance, and request that the Examiner give the application favorable reconsideration and permit it to issue as a patent. If the Examiner believes that the application can be put in even better condition for allowance, the Examiner is invited to contact Applicant's representatives listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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